‘I want to have virtual reality distraction during my colonoscopy!’

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Endoscopy International Open 2020; 08: E1389–E1391
DOI 10.1055/a-1226-6412
ISSN 2364-3722

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Patient experience is by far the most neglected field in the dominant topic of quality of screening colonoscopy [1]. This is not surprising as historically, endoscopists’ foremost concerns have been first to complete the examination in the cecum and second to find at least one adenoma. I still remember 20 years ago the pride on the face of a trainee who was able to reach the cecum, as much as the shame and disappointment of new trainees when they failed to find at least a diminutive adenoma after an extenuating and meticulous withdrawal.

For the endoscopist, pre-examination patient anxiety, as well as intra-procedure and post-procedure pain, have always represented, in the best case, a nuisance to be instantly addressed with a robust cocktail of sedatives. How dare a patient complain about the drugs’ possible drawbacks, when considering that colonoscopy is, by itself, a life-saving intervention aimed at preventing a painful and premature death from colorectal cancer?

Deep or conscious sedation? CO_2 or water? Colonoscopy or virtual colonoscopy? These questions capture most of our (modest) contributions to research on the patient experience in the last 20 years. Competition between anesthesiologists and endoscopists for propofol administration, prohibitive costs for CO_2 pumps, extreme supporters of underwater techniques, and nasty ideological battles between radiologists and endoscopists all have shifted the mood of our community in one direction or the other with little room, if any, for decent compromises.

Despite this, it is hard to conclude that we have succeeded. When you look at the expressions on the faces of patients in the waiting room, you don’t need a randomized trial to record their anxiety, now and then shading in fear of or repulsion for the examination or the disease. Is this really unexpected? Patients who have never undergone colonoscopy don’t know what is coming. The hospital setting – where colonoscopy is still done in several countries – is unfamiliar for most of the healthy people who undergo screening. Unless patients are told that they will “sleep” throughout the procedure, i. e. with propofol, they will not know about the possible benefit of sedation or the underwater technique. In addition, ignorance about prevalence of disease and the real meaning of polyps is fuel for their burning anxiety about the outcome of the procedure.

Most of us would argue that the patient experience is, in the end, just a false problem. Isn’t it true that any of us with our painless technique is competent in providing a pleasurable intra-procedure experience? How often have we take deep satisfaction in seeing patients go from being nasty and even aggressive and distrustful before to deeply grateful at the end of the examination?

Unfortunately, our recurrent and somewhat arrogant attempt to declassify patient experience as a false problem is far from being confirmed by real data. When a fair methodology is used to analyze it, patient experience appears to be much worse than expected and large inter-endoscopist variability remains after adjusting for confounding factors [2]. Detailed findings from a Polish study [2] in which a validated tool (Gastronet) was used to evaluate patient experience during and after colonoscopy found that nearly 25 % of patients reported having suffered severe pain during or after colonoscopy, because of both unmodifiable and modifiable factors. In addition, similar published data from the English bowel screening program showed that up to 25 % of patients undergo screening colonoscopy have unexpected pain during or after the procedure, despite feeling well informed and being treated with respect [3].

The consequences of such dismal data may be catastrophic. Irrespective of the good endoscopic outcome of an individual procedure, a negative patient experience may reduce compliance with follow-up examinations or discourage other individuals from undergoing the unpleasant procedure. For instance, more than 20 % of subjects with a positive immunochemical fecal test (FIT) in our European screening programs simply refuse to undergo post-FIT colonoscopy [4]. This is a complete disaster when considering that such patients have a high risk of advanced neoplasia, and that their refusal undermines the efficacy of the FIT test, because its ability to identify high-risk patients is useless if they refuse to undergo confirmatory testing.

The simplest solution to this problem is to recognize it for what it is: psychology! The personal beliefs, fears, and expectations of patients affect their experiences before, during, and after examination. Only if we focus on psychological factors can we succeed in improving the patient experience. This means extending education about colonoscopy to encompass more than the technical details of the procedure and including all the possible stimuli that may affect patient reactions.

In this issue of the journal, Govert V et al. describe a pilot study of how virtual reality (VR) may improve patient experience throughout colonoscopy. Randomized patients were exposed to realistic scenes of attractive places via electronic glasses that projected three-dimensional images directly on their retinas. Menacing endoscopy towers, vital monitors, and steel furniture were suddenly replaced by exotic islands (▶ **Fig. 1**) and similar pleasurable panoramas with the addition of graphic interfaces to advanced endoscopic technology. This description should be far from surprising. Anyone familiar with the latest developments in videogaming knows that computer graphics can recreate any possible scenario with the most convincing veracity.

Govert et al. showed that VR can be safely used during colonoscopy without hampering the technical success of the procedure. The apparent lack of a significant improvement in the patient experience was clearly related to the small sample size of 19 patients. Considering the huge variability in any psychological measurement, much larger sample sizes are actually needed for such studies. However, the success of VR technique in other fields, such as pediatrics and orthopedics [5 – 8], suggests that it can make a favorable contribution to the field of endoscopy.

As with the recent introduction of AI in the field of endoscopy, use of VR is just beginning. Quite soon, patients will be able to select their favorite setting, and maybe meet people with whom they are familiar during colonoscopy, pushing the examination to the same indefinite border as a dream and reality. In addition, synergistic matching between VR and sedation protocols may be optimized, resulting in a completely different experience from the way endoscopic procedures are performed today. If this is exciting for adults, it would mandatory for pediatric endoscopy. Partnerships between endoscopic and videogame companies may provide attractive new scenarios in the pediatric setting.

In conclusion, endoscopists need to understand the significance of the psychological experiences of patients throughout endoscopy and take seriously the need for successful and sustainable solutions to related concerns. In that regard, VR is a mature, widely available, and low-cost technology that could be promptly implemented in our endoscopy units.

▶ **Fig. 1** Virtual reality scene (left) and endoscopy suite (right).

Competing interests

The authors declare that they have no conflict of interest.

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